



GOOD ACOUSTIC DESIGN - WHAT MIGHT IT ENTAIL

Adrian Passmore, Arup

adrian.passmore@arup.com

THE CONTEXT OF GAD

Aims of the ProPG

- to assist the delivery of sustainable development by promoting good health and well-being through encouraging a good acoustic design process that is multi-faceted and seeks to deliver the best acoustic outcome for a particular site.

ProPG foreword/section 1 & SD2 section 1

THE CONTEXT OF GAD

What it should be

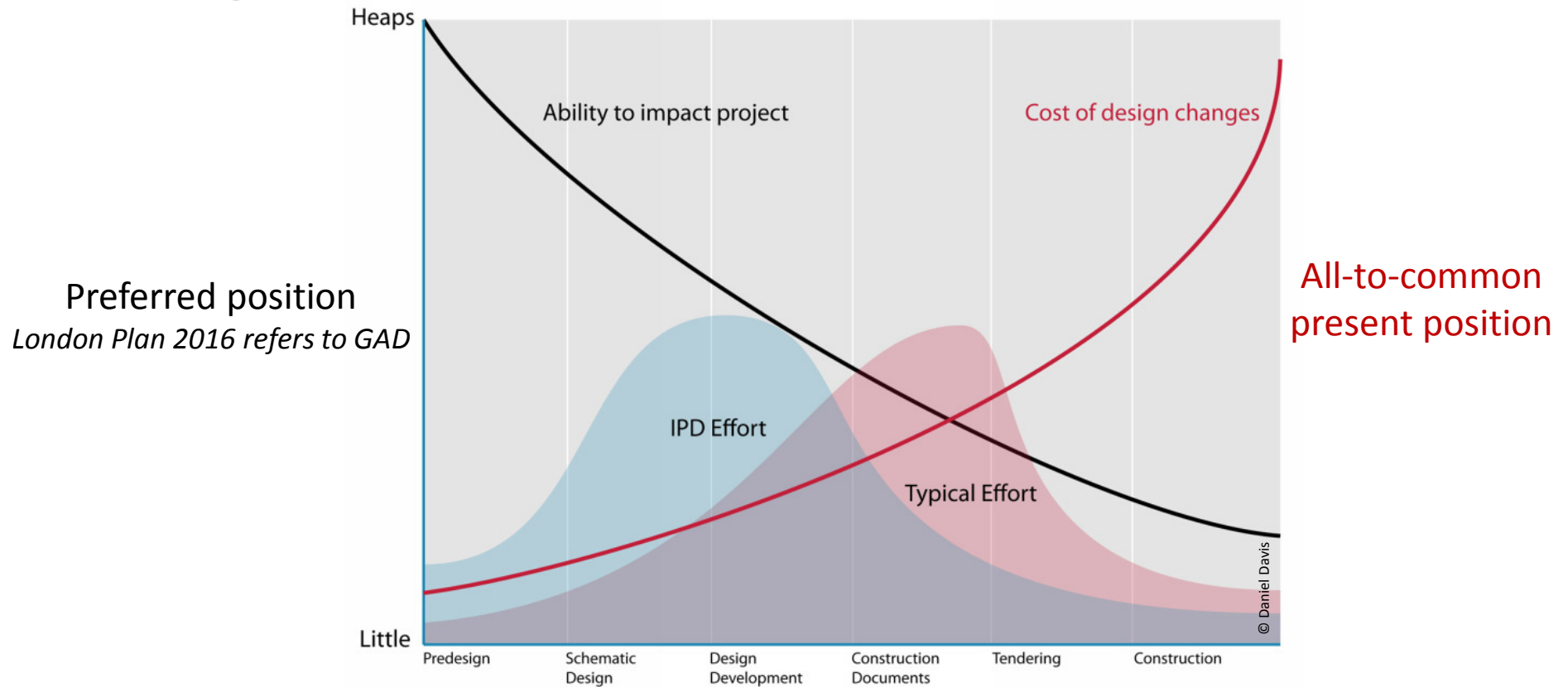
- essential and imperative consideration of acoustic design at an early stage – GAD covers both planning and design issues
SD2 section 3.1
- a multi-faceted and integrated approach to achieve good acoustic conditions, both internally and externally
ProPG para 2.19
- an integrated solution that achieves good (acoustic) outcomes for stakeholders without compromise with due consideration of other relevant issue
ProPG foreword

What it shouldn't be

- simply compliance with recommended internal and external noise exposure standards
- a one-size-fits-all approach, “overdesign” and/or “gold plating”
- solely relying on the building envelope aka creating *acoustic prisons*

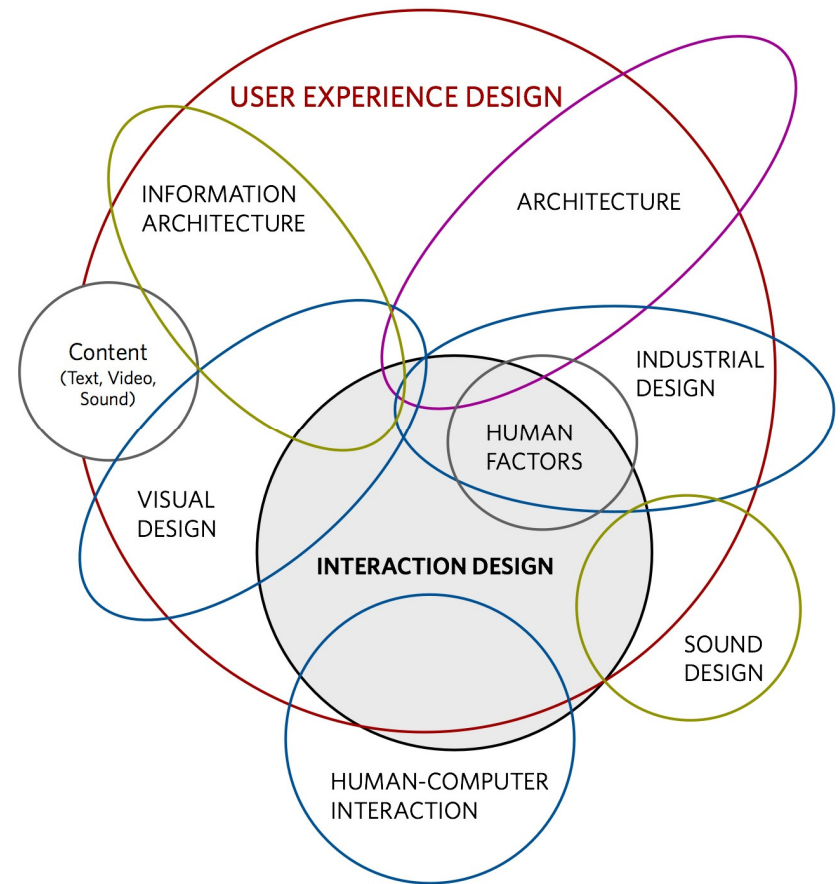
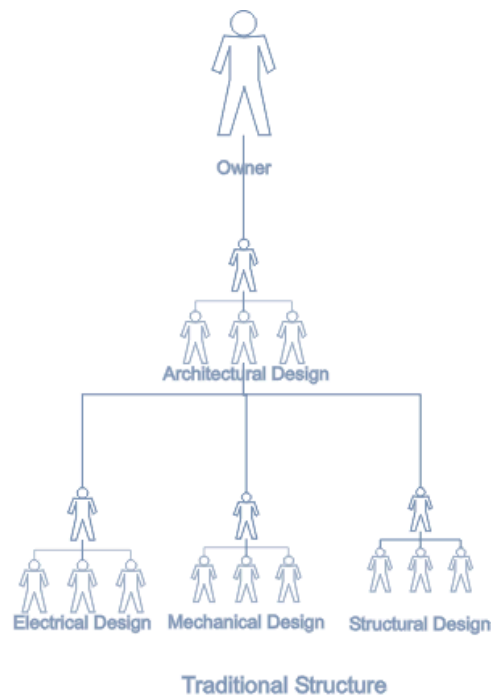
ABILITY TO INFLUENCE

Setting the scene



ABILITY TO INFLUENCE

Possible “new” approaches



ABILITY TO INFLUENCE

Re-defining the goals

- GAD
- sustainability
- good health
- well-being/wellness
- positive/best outcomes
- occupants/end-users

Appendix 1 Schedule of Services
Part 5 Acoustician Scope of Services – REV 00

Introduction

The Scope of Services has been divided into sections but such division does not affect the Acoustician's obligation generally to provide the Services as a whole but also to the timing and sequence of works as stated as being required but which are generally expected of a competent Acoustician.

1 General Services

1.1 Administration

1.1.1 Comply in all respects as may reasonably be possible with the Project Management Plan, including but not limited to the Project Management Plan, Protocols and Conject Naming and Numbering Protocols.

1.1.2 Provide all drawn information in a form and style compatible with the BIM Execution plan. Make any 3d model available via Conject, at reasonable request.

1.1.3 Use all reasonable endeavours to comply with the EIR procedure. This project will be administered using the G system. All drawing issues, drawing comments and responses via Conject. The Consultant shall adhere to the Employer's Conject Document Management Protocols and Conject Naming Protocols.

1.1.4 Print, reproduce or purchase all documents, drawings, maps and records as reasonably necessary for the due and proper performance of the Project. Make such records available for inspection.

1.1.5 Keep full and proper records of all material discussions or meetings and keep full and proper records of all meetings attended or conducted on behalf of the Project. Make such records available for inspection.


1.1.6 Advise the Client (immediately upon becoming aware of the Project) of the Project which currently fall outside the scope of the Project.

1.1.7 Do not pass on any licenses costs associated with OS maps, etc.

1.1.8 The Employer will issue a design responsibility matrix highlighting to ensure no scope gaps. Review, comment on and agree to the matrix.

1.2 Programmes & reporting

1.2.1 The employer will utilise ADEPT methodology to establish a design programme integrated across the design disciplines and subcontractors.

1.0 GENERAL CONSIDERATIONS		ACOUSTIC ENGINEER	
1.1.	For ease of reference, the services have been divided into the sections as hereinafter provided, but such division is not intended to, and shall not, limit or affect the consultant's obligation generally to provide the services as and when may from time to time be necessary or appropriate for the proper and timely completion of the Project.		
1.2.	The Consultant deliverables and services set out in this scope of works are for the Acoustic design services.		
1.3.	The principal scope of works aligns to the following stages:  (i) – The project will require consultant services from Stage 3 commencing in line with the project programme. It is expected that the selected consultant will deliver the services within the budget.		
1.4.	An agreement to provide services for the project, with the intent to proceed with the full scope of works.		
1.5.	The consultant is to be fully committed to the project. The consultant is to use best practice construction. The project will aim to achieve Sustainable Homes in accordance with the project brief.		
2.0 Legal			
2.1 Deed of Appointment			
2.1.1	Attention is drawn to the draft Deed of Appointment. The Consultant is required to provide the services set out in the Deed of Appointment.		
3.0 SCOPE OF SERVICES			
ALL STAGES			
3.1 General			
3.1.1	All services will be carried out in accordance with the project Brief.		

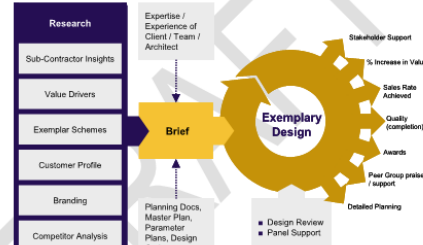
Strategic Brief

1 Strategic Brief

1.1 Creation of Value through the Brief

The Brief is traditionally seen as the baseline document from which project performance is measured. However in the case of Chelsea Barracks the Brief is also used as an opportunity to create value. This value creation is the result of an extensive period of research into the brief involving specialist contractors, agents, branding consultants and research specialists.

This research when coupled with the input from the design team and viewed in the context of "unmovable" requirements such as the Planning Permission, Section 106, Parameter Plans and Design Code will form the Brief.



1.2 Vision Statement for the Site

"To deliver a world-class sustainable residential development that empathises with and enhances the setting, heritage and context of this distinctive and historic area of London, whilst delivering best value and return to the client body."

1.3 The Strategic Objective of the Brief

The Strategic Objective of this Brief is for it to contribute to the delivery of the Vision Statement for the site. This aspiration can be split down into the following goals:

GREEN INFRASTRUCTURE

Metropolitan morphology

- Hardscapes radiate rather than absorb heat with –ve effects to water quality, heat-related illnesses (Urban Heat Island Effect)
- Soft Cityscapes with green infrastructure, such as moss walls/tree façades and planting improves aesthetics, well-being, and the cooling potential of buildings
(SD2 sections 3.1 i-vi, 3.2, 3.5, 3.7, 3.10)



GREEN INFRASTRUCTURE

Forming quieter surroundings



CIRIA C712 London, 2012
The benefits of large species trees in urban
landscapes: a costing, design and management
guide

Primary effects

- planting belts incorporating trees less than 3m in width can provide modest noise reduction
- augmented by
 - planting mix
 - soft, rough ground and understorey vegetation attenuate low frequency sound
 - bunds or fencing

Secondary effects

- soundscaping (birdsong)
- removing visual contact with the noise psychologically reduces the irritating effects

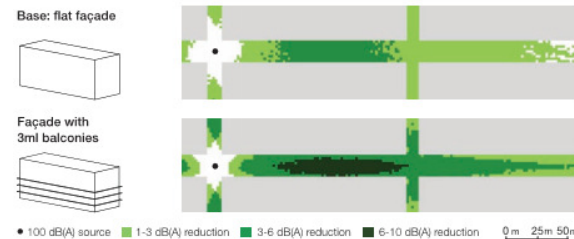
GREEN INFRASTRUCTURE

Green Building Envelope

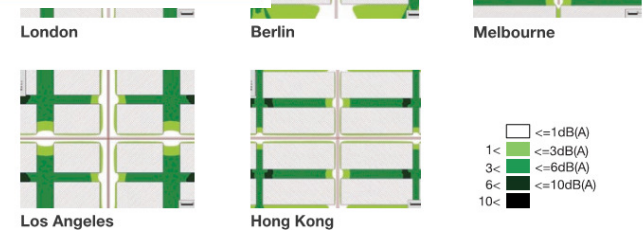
- published evidence indicating green façades can act as effective sound absorbers (HOSANNA project et al)
- greater levels of attenuation in “canyon” conditions and at greater distance from source and of emergent noise control
- Sensitive to street width, building dims, overhangs, façade coverage area
- psychological perception of quiet complementing physical reductions



Impact of overhangs on noise reduction from the application of green façades



all five case studies.

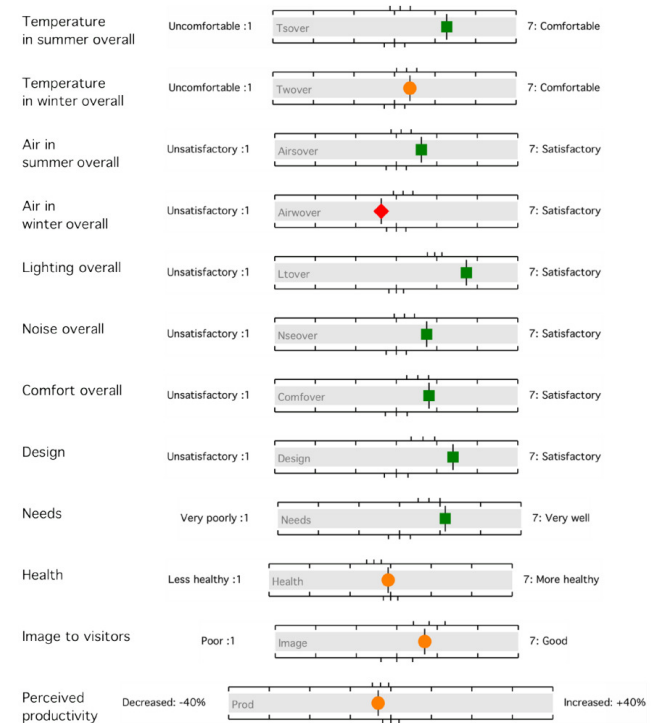


http://www.arup.com/cities_alive/green_building_envelope

QUALITY OF LIFE EVALUATION

Current 'best' practice

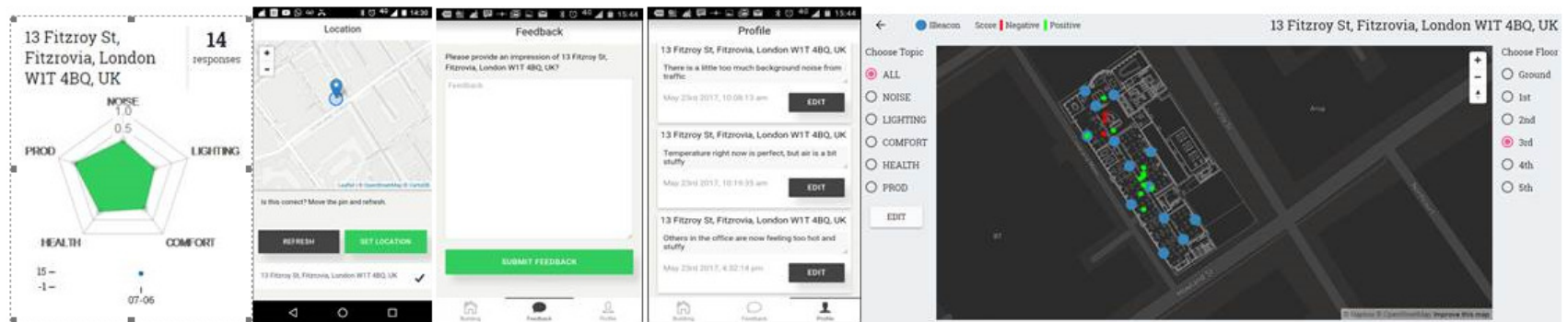
- few POE platforms (BUS methodology) geared-up to domestic buildings
- limited take-up currently (ca. 10% of all buildings in dataset)
- best response rates from paper surveys - barrier to large scale deployments
- lends itself more to PRS and HA



QUALITY OF LIFE EVALUATION

Future shape

- virtuous feedback cycle - influencing business models/briefs, policy
ProPG paras 3.14-3.15
- more attention given to quality of service as a differentiator
- smart digital solution/Internet of Things (environmental sensors with real-time feedback collected (wearables/GoogleHome/mobilePhone)
- potential advantage of big-data *ProPG paras 3.14-3.15*



MONETISATION

Research and the “business” case

Key findings

- disproportionately low amount of research
- evidence that ‘peace and quiet’ is a KPI
- evidence of ‘Place-making’ *ProPG Stage 2 element 3*
- evidence that property differentiation could enjoy lower void rates, increased rental, capital value
- evidence not yet translating into widespread action in the market

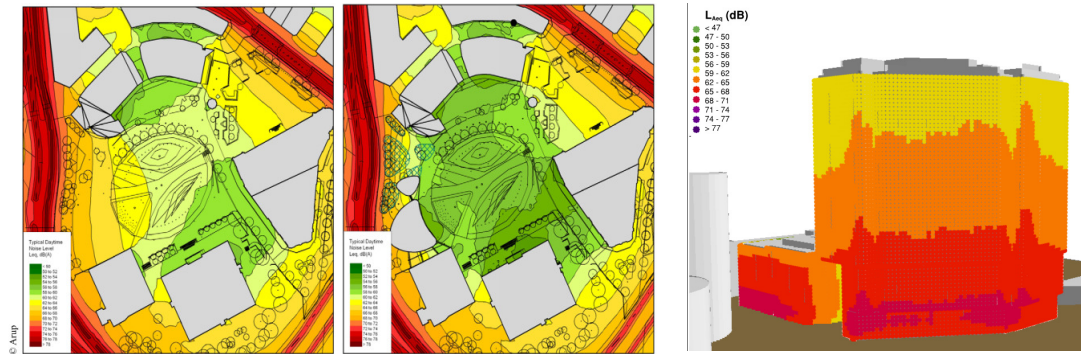


Additional key performance indicators

Developer	Health and Wellbeing	Association
<ul style="list-style-type: none"> • Brand recognition • Client satisfaction • Community investment • Post occupancy evaluation measures 	<ul style="list-style-type: none"> • equity • Client & managing agent satisfaction • Community engagement • Number of complaints 	<ul style="list-style-type: none"> • satisfaction overall • Tenant satisfaction with repairs & maintenance • Number of people helped into employment • Average time to complete non-urgent repairs

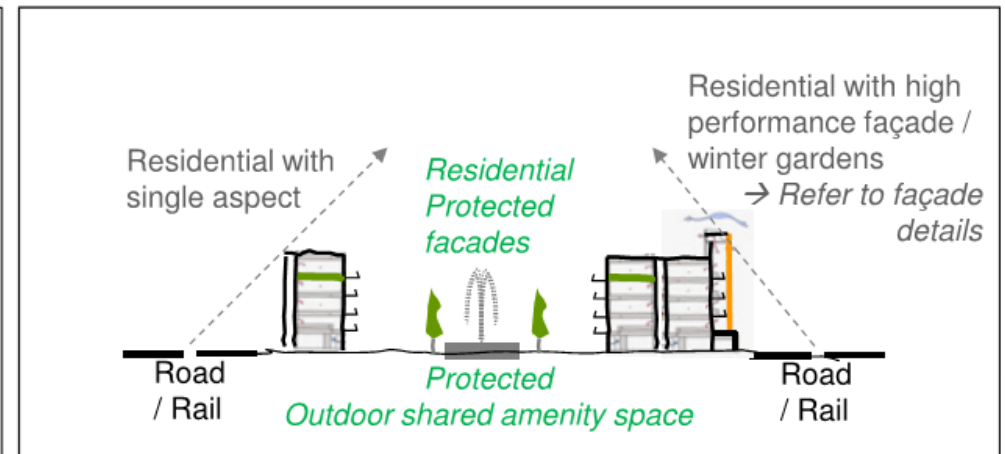
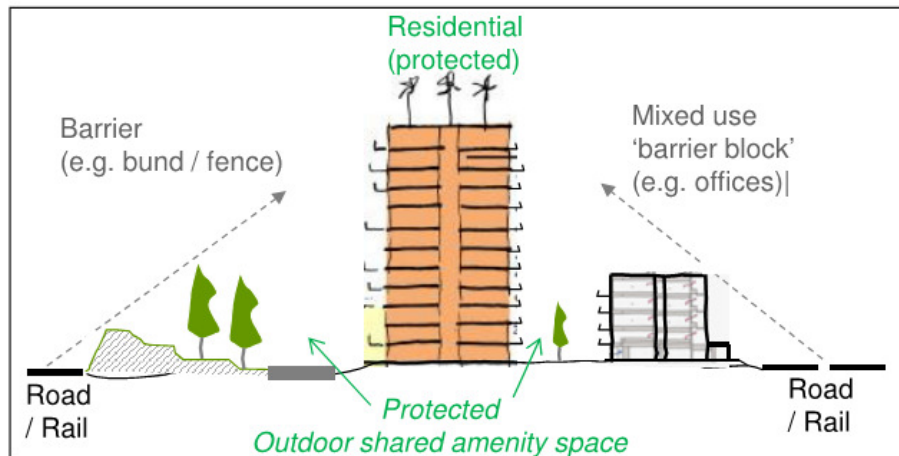
GREATER INFLUENCE

Enriched discussions/Deeper understanding



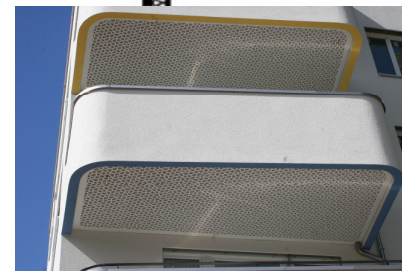
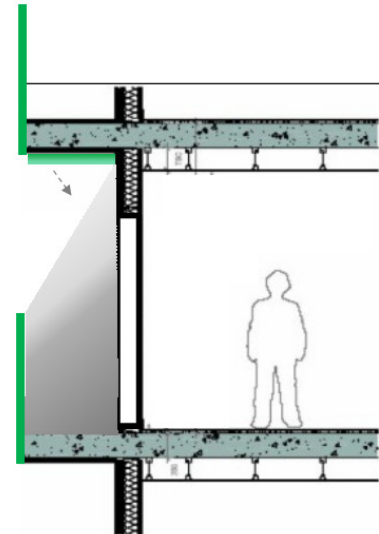
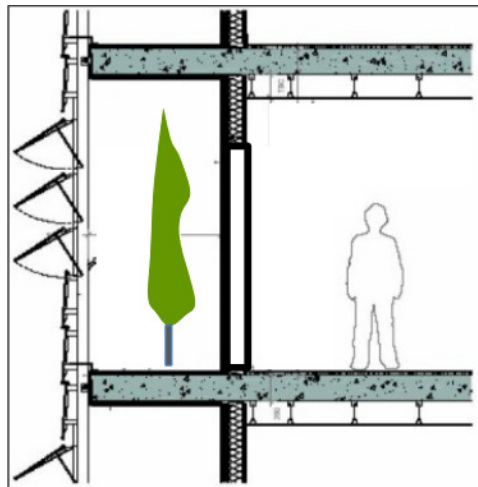
WHEN GAD COMES TOGETHER

Good Use of Space & Mass *SD2 sections 3.1-3.7,3.10*



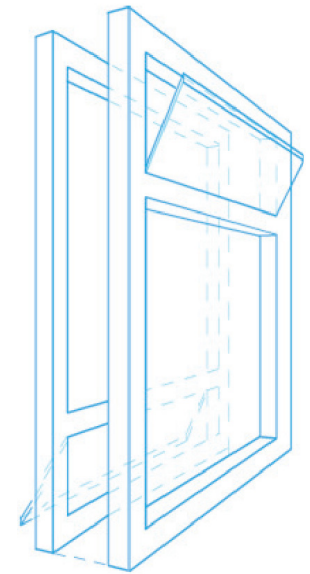
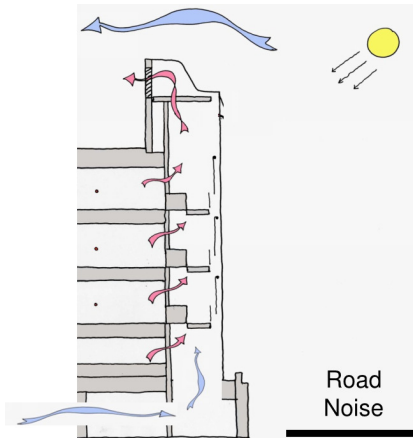
WHEN GAD COMES TOGETHER

Good Envelope Design #1 *SD2 sections 3.8-3.9*



WHEN GAD COMES TOGETHER

Good Envelope Design #2 *SD2 sections 3.8-3.9*



WHAT GAD MIGHT (SHOULD) ENTAIL

Recap

- Industry recognition and acceptance
 - future GAD Award Scheme *SD2 section 4 & ProPG section 2.24*
- Redefining the “commodity”
- Greater/earlier influence *SD2 section 3.1*
- Re-positioning of the building occupants and acoustic practitioner *ProPG para 3.14-3.15*